

Michigan Bovine TB Eradication Project
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Four Brochures on Reducing the Risk of Bovine TB

Bovine tuberculosis is a chronic infectious disease of cattle and other mammals. Bovine TB is costly to the livestock industry, can create trade barriers and is a human health threat. Beef and dairy farmers can decrease the risk of exposing their cattle to bovine TB by limiting cattle-to-deer contact and protecting cattle feed from wildlife.

Movement restrictions have helped to reduce the risk of infection from other cattle. However, Michigan is unique in that several wildlife species in northeast Lower Michigan have also tested positive for bovine TB. Wild, white-tailed deer serve as a reservoir and a potential source of infection for cattle.

Because of the nature of the TB bacteria, deer behavior, and general farming practices, perhaps the greatest risk of infection for cattle is feed and water contaminated by infected deer and wildlife.

There are many strategies producers can adopt to limit the spread of bovine Tuberculosis from wildlife to Michigan Livestock. Please review the following brochures on line at www.michigan.gov/bovineTB (under Livestock Issues) to find out how:

- *Bovine Tuberculosis: Reducing the Risk, a guide for producers.*
- *Bovine TB: Is your beef or dairy farm at risk for bovine TB from wildlife?*
- *Bovine TB: What Can Be Done to Limit Interaction Between Livestock, Wildlife, and Feed*
- *Bovine TB: What wildlife TB risk reduction steps are available?*



Bovine Tuberculosis UPDATE



Michigan Department of Agriculture • Michigan Department of Natural Resources • Michigan Department of Community Health

Fall/Winter 2006

Progress Report

by *Bridget Patrick, Bovine TB Eradication Coordinator*

Michigan continues to place a high priority on our bovine TB eradication efforts. The eradication of this disease from Northern Lower Michigan's wild white-tailed deer and cattle herds is a constant challenge; evident in the fact that we have found one privately owned bTB positive cervid herd and depopulated seven cattle herds since our last newsletter.

Although the DNR found that the disease prevalence rate went down to 1.2% in Deer Management Unit 452, the hot pockets of disease are still active and the potential for transmission into and from cattle is still very much a reality.

We should recognize the hard work and determination of Michigan's large animal veterinarians in private practice and government who have helped our producers test for bovine TB. Their commitment is necessary for the economic health of the livestock industry statewide.

Bovine TB project partners met again with national USDA tuberculosis personnel in Riverdale, MD to discuss the Michigan program and assure them that Michigan intends to eradicate this disease from both the wildlife and livestock in the Northern Lower Peninsula.

With continued commitment to the program, and some new initiatives, there was agreement that the current status will remain. With a show of support from each sector Michigan will apply for improved status in areas of the Lower Peninsula.

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MANAGEMENT OF BOVINE TUBERCULOSIS IN MICHIGAN DEER

Dr. Stephen M. Schmitt
Michigan Department of Natural Resources
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Michigan is having more success eradicating bovine TB from a wildlife reservoir than any other place in the world. However, this success is fragile. We need to be diligent in maintaining our control strategies.

Since 1994, the state of Michigan has recognized a problem with *Mycobacterium bovis* (bovine tuberculosis - TB) in wild white-tailed deer from a thirteen county area in northeastern Lower Michigan. In 2005, surveillance activities for bovine TB continued statewide, with an emphasis on the northern half of Lower Peninsula. In white-tailed deer, 16 animals cultured positive from 7,363 deer submitted for testing.

Since the index cases were first identified, 145,847 free-ranging deer have been tested for bovine TB; 527 infected animals have been found. Increasingly, the spatial epidemiology of the disease is revealing a highly focal, clustered pattern. Approximately 97% of all positive deer identified to date originated from a five county area. Moreover, within that area, the vast majority of positive deer were from Deer Management Unit (DMU) 452. Even within DMU 452, the spatial arrangement of cases is highly clustered, in spite of the fact that sampling effort has been relatively uniform geographically.

Strategies for eradication of bovine TB from Michigan wildlife continue to focus on 1) reducing deer population densities to biological carrying capacity and 2) reducing artificial congregation of deer by restriction or elimination of baiting and feeding. These strategies have been implemented through provision of extra rifle seasons, unlimited antlerless deer permits and by prohibition or restriction of deer baiting and feeding. In the five county area most affected by bovine TB, deer numbers have declined approximately 50% since 1995. The achievement of this substantial population reduction highlights the critical role that hunters have played in the control of bovine TB in Michigan.

Nonetheless, persistent focal areas of high disease density on private land remain problematic. Since 2002, baiting and feeding have been prohibited in the seven counties from which 98% of all bovine TB positive deer have originated. Policy makers have committed to keeping these regulations consistent for a five-year period in order to improve compliance and enforcement. The overall scope of baiting and feeding has declined dramatically since 1997, with large scale feeding largely a thing of the past. While some illegal baiting and feeding continues to occur, the size of these sites is substantially reduced, and

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heightened enforcement is expected to reduce the practice further over the next several years.

While much work remains, substantial progress has been made towards eradication of bovine TB from Michigan wildlife. Apparent prevalence in the core area of the outbreak DMU 452 was 1.2% in 2005, a decrease of 76% since 1995. Trend analysis of prevalence data from 1995 to 2005 indicates a statistically significant decreasing trend. And two methods of estimating bovine TB transmission rate in the deer herd in DMU 452 are showing statistically significant decreasing trends.

Michigan's bovine TB intervention strategies are working; however, it is too early to claim victory in eradicating the disease. The need to stay the course is important, but will be difficult, due to ever increasing pressure from a variety of sources to lessen these intervention strategies.

Additional Bovine TB Intervention Strategies

by Dr. Steve Schmitt

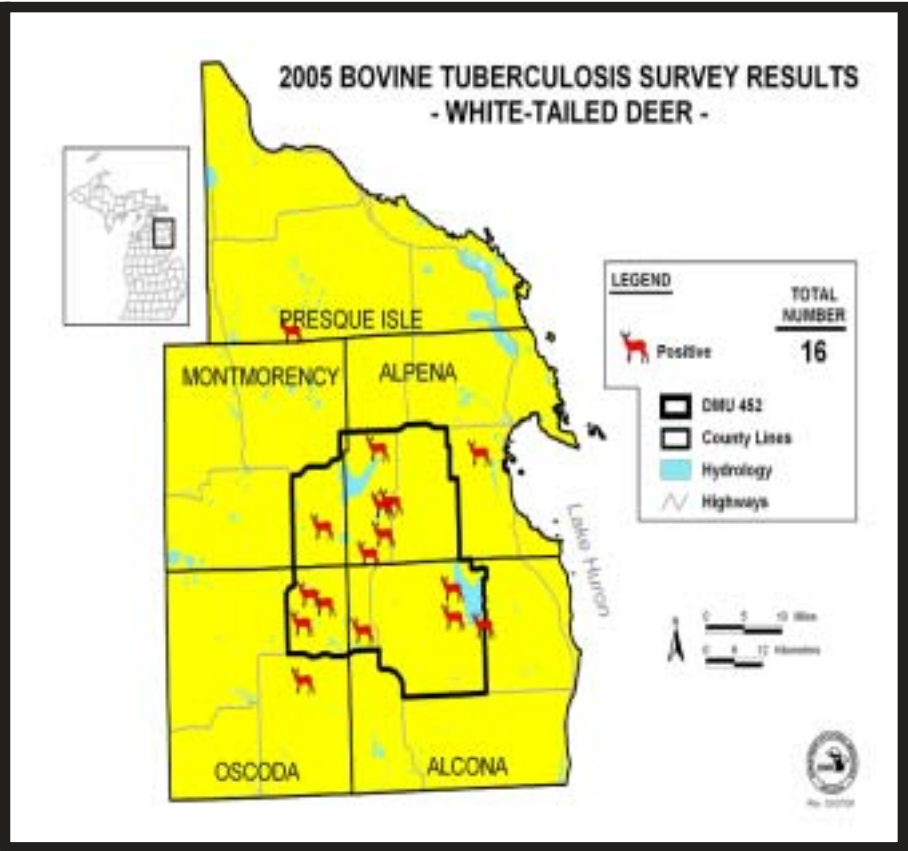
The Michigan Department of Natural Resources (DNR) intervention strategies have been successful in reducing the disease prevalence in DMU 452; however, there are clusters of bovine TB in some townships that will be more difficult to manage. With that in mind, the state of Michigan is evaluating an intervention strategy that may be more acceptable to many hunters and landowners. The strategy is based on live-trapping and bovine TB-testing of wild deer, and removal of positive animals. And if a safe and effective bovine TB vaccine could be developed, then captured deer that tested negative on site could be vaccinated before release. This strategy is not intended to replace initial strategies, but may assist them in eliminating bovine TB from the deer herd.

The DNR pilot-rialed the new strategy in a township with relatively high bovine TB prevalence within DMU 452 during the winter of 2003. The results of the pilot are cause for optimism on a number of fronts. The project was well received and supported by the public. Appreciable numbers of deer were captured with reasonable efficiency and low mortality. Tracking and removal techniques worked well. The one facet of the project that failed was the blood test.

An effort to develop a more accurate blood testing procedure was the focus of the pilot during the 2004 and 2005 hunting seasons. Hunters were asked to collect blood from deer harvested in DMU 452, and to submit the blood and deer head to a deer check station. The lymph nodes from the deer heads were cultured for bovine TB and culture results compared with results from four bovine TB blood tests. One blood test (Rapid Test) that can be done in 10-15 minutes in the field, with whole blood, looks promising.

The DNR is working with the United States Department of Agriculture researchers in Ames, Iowa to develop a bovine TB vaccine. Preliminary results are encouraging, and the vaccine appears to give some protection from disease. Vaccinated groups of deer given the vaccine orally or subcutaneously had fewer visible bovine TB lesions and less severe bovine TB lesions than unvaccinated deer. Assuming this is possible, it will take a minimum of 5-10 years to develop a safe and effective vaccine and to obtain approval for its use in a field situation. The progress report, *Year One*, is available on the web in the Library section at:

| Year | Inside DMU452 | 5-County Outside DMU452 |
|------|---------------|-------------------------|
| 2005 | 1.2% | 0.1% |
| 2004 | 1.7% | 0.2% |
| 2003 | 1.7% | 0.2% |
| 2002 | 2.6% | 0.3% |
| 2001 | 2.3% | 0.3% |
| 2000 | 2.5% | 0.4% |
| 1999 | 2.4% | 0.2% |
| 1998 | 2.7% | 0.3% |
| 1997 | 4.7% | 0.4% |
| 1996 | 2.5% | 0.2% |
| 1995 | 4.9% | 0.1% (n=3556g) |



Statewide program to adopt Radio Frequency Identification Tags

by Kevin Kirk, Michigan Department of Agriculture Animal Industry Division, RFID Specialist

Starting March 1, 2007, all cattle in Michigan, not just those under the bovine TB eradication program must be identified with Radio Frequency Identification (RFID) “electronic” ear tags prior to movement from premises. All Michigan cattle are to be tagged if they are leaving the farm to be sold or changing ownership. However, producers are encouraged to tag animals born on their farms while the animals are small. The RFID tags will replace the old metal tags beginning March 1, 2007.

The benefit to Michigan livestock producers for having all cattle electronically identified is that it provides assurance for animal health and pre-harvest food safety and security. The time it takes to trace the origin of a diseased animal is greatly reduced. The accuracy, and conclusiveness in identifying the origin of food borne and zoonotic diseases is also increased. The RFID program should prevent the livestock producer from purchasing potentially sick animals.

The RFID number is recorded in the database at slaughter as proof that the animal arrived at slaughter, then the tag is removed and destroyed. RFID also allows Michigan producers to maintain and expand export markets.

Michigan is moving to mandatory electronic ear tags for cattle because these tags will provide for faster intra and inter-state animal tracking for disease control and eradication programs and may be required by USDA for moving the Modified Accredited Advanced Zone to higher TB status (RFID was key to the Upper Penninsula obtaining TB Free status).

The MDA Bovine Tuberculosis Advisory Committee (made up of producers and industry representatives), MDA Livestock Identification Advisory Committee, Michigan Cattlemen's Association, Michigan Farm Bureau, Michigan Milk Producer's Association and the Michigan Pork Producer's Association have all voiced support for the program.

Producer's should call Michigan Department of Agriculture at 1-866-870-5136 to receive their National Premises Registration Number and place tag orders. The website for additional information or to check for updates on the mandatory cattle identification program is www.michigan.gov/mda.

Rules and Regulations in the Federal Register

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On Thursday, October 6, 2005 USDA published an interim rule that granted the Upper Penninsula with Bovine TB Free Status. At that time they amended the bovine tuberculosis regulations to designate the Upper Peninsula of the State of Michigan as an accredited-free zone. USDA had determined that Michigan met the requirements for zone recognition and that the Upper Peninsula met the criteria for designation as an accredited free zone. This action relieved restrictions on the interstate movement of cattle and bison from the Upper Peninsula.

Michigan must continue to be diligent with measures to track and inspect livestock movement across the Mackinac Bridge; is expected to establish an agreement with the State Police Motor Carrier Division to pull over violators; and is expected to continue to conduct some form of statistically significant surveillance testing. These, and additional programs will be key to the Upper Peninsula (comprised of Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, and Schoolcraft Counties) keeping TB Free Status and will be key in our efforts to apply for a higher status in the Southern Lower Peninsula.

Summary of bovine Tuberculosis positive herds in Michigan 2005 - 2006.

| Herd # | County | Herd Type | Herd Size | Date Diagnosed Positive |
|--------|-------------|-----------|-----------|-------------------------|
| 34 | Alpena | Beef | MD | 10/24/05 |
| 35 | Alpena | Beef | MD | 12/08/05 |
| 36 | Antrim | Beef | LG | 12/12/05 |
| 37 | Alpena | Beef | LG | 02/09/06 |
| 38 | Alpena | Beef | SM | 04/17/06 |
| 39 | Antrim | Dairy | SM | 05/01/06 |
| 40 | Alpena | Dairy | MD | 05/19/06 |
| * | Montmorency | WTD | LG | 10/24/06 |

LG - Large (over 100 animals)
MD - Medium ((over 50, under 100)
SM - Small (under 50 animals)